M_{22} is the vector space of 2×2 matrices. Let S_{22} denote the set of all 2×2 symmetric matrices. That is

M$_{22}$ es el vector de espacio de tamaño matricial 2×2. Dentro de S_{22} denotar el conjunto de todos las matrices 2×2 simétricas. Esto es

$$S_{22} = \left\{ A \in M_{22} \,\middle|\, A^t = A \right\}$$

(a) Show that S_{22} is a subspace of M_{22}.

(a) Mostrar que la S_{22} es un subespacio de M_{22}.

(b) Exhibit a basis for S_{22} and prove that it has the required properties.

(b) Mostrar la base para S_{22} y demostrar que posee las propiedades requeridas.

(c) What is the dimension of S_{22}?

(c) Cual es la dimensión de $S_{22?}$

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